AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method for *in vitro* culture of hematopoietic progenitor cells to produce neuronal cells , comprising:

culturing hematopoietic progenitor cells in an environment that promotes hematopoietic progenitor cell differentiation, under conditions sufficient to produce neuronal cells,

wherein said conditions comprise bFGF and EGF.

2. (Original) The method of claim 1, wherein the environment comprises a solid, porous matrix having a unitary microstructure.

3. – 4. (Cancelled)

5. (Previously Presented) The method of claim 1, wherein the hematopoietic progenitor cells are $CD34^+$ or $CD34^-$ cells, and wherein the environment further comprises growth factors selected from the group consisting of putrescine, progesterone, sodium selenite, insulin, transferrin, and NGF.

6. – 8. (Cancelled)

9. (Original) The method of claim 1, wherein said hematopoietic progenitor cells are obtained from a blood product.

10. (Original) The method of claim 9, wherein said blood product is unfractionated bone marrow.

11. (Original) The method of claim 2, wherein the porous, solid matrix is an open cell porous, solid matrix having a percent open space of at least 75%.

12. (Previously Presented) The method of claim 2, wherein the porous, solid matrix has pores defined by interconnecting ligaments having a diameter at mid-point, on average, of less than 150μm.

13. (Previously Presented) The method of claim 12, wherein the porous, solid matrix is a metal-coated reticulated open cell foam of carbon containing material.

14. (Original) The method of claim 13, wherein the metal is selected from the group consisting of tantalum, titanium, platinum, niobium, hafnium, tungsten, and combinations thereof, and wherein said metal is coated with a biological agent selected from the group consisting of collagens, fibronectins, laminins, integrins, angiogenic factors, anti-inflammatory factors, glycosaminoglycans, vitrogen, antibodies and fragments thereof, and combinations thereof.

15. (Previously Presented) The method of claim 14, wherein the metal is tantalum.

16. (Original) The method of claim 2, wherein the porous, solid matrix having seeded hematopoietic progenitor cells and their differentiated progeny is impregnated with a gelatinous agent that occupies pores of the matrix.

17. (Cancelled)

18. (Previously Presented) The method of claim 1, wherein the hematopoietic progenitor cells are enriched for said $CD34^+$ cells.

19. (Original) The method of claim 1, further comprising first isolating said hematopoietic cells from nonnucleated cells.

20. (Original) The method of claim 1, further comprising enriching said hematopoietic cells for cells having a common marker for a specific tissue.

21. - 23. (Cancelled)

24. (Previously Presented) The method according to claim 1, wherein the hematopoietic progenitor cells are enriched for $CD34^-$ cells.

25. (Previously Presented) The method of claim 1, wherein the cells are $CD34^+$ Lin^-.

26. (Previously Presented) The method of claim 1, wherein said conditions further comprise NGF.

27. (Previously Presented) The method of claim 25, wherein said conditions further comprise NGF.

28. (Previously Presented) A method for *in vitro* culture of hematopoietic progenitor cells to produce neuronal cells, comprising:

culturing hematopoietic progenitor cells in an environment that promotes hematopoietic progenitor cell differentiation, under conditions sufficient to produce neuronal cells,

wherein said conditions comprise bFGF and NGF.

29. (Previously Presented) The method of claim 28, wherein the environment comprises a solid, porous matrix having a unitary microstructure.